APPENDIX A

PHASE I ENVIRONMENTAL SITE ASSESSMENT SUMMARY

Phase I Environmental Site Assessment and Asbestos-Containing Building Materials and Lead-based Paint Surveys

Park Lake Homes I Property

9900 – 8th Avenue SW

Seattle, Washington

January 15, 2003

For

King County Housing Authority

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PHASE I ENVIRONMENTAL SITE ASSESSMENT AND ASBESTOS-CONTAINING BUILDING MATERIALS AND LEAD-BASED PAINT SURVEYS PARK LAKE HOMES I PROPERTY 9900 – 8TH AVENUE SW SEATTLE, WASHINGTON FOR KING COUNTY HOUSING AUTHORITY

1.0 INTRODUCTION

This report summarizes the results of our Phase I Environmental Site Assessment (ESA) and asbestos and lead-based paint surveys of the Park Lake Homes I site in Seattle, Washington. The site comprises numerous addresses; the general address of 9900 – 8th Avenue SW is used for reference in this report. The site is developed with residential homes and associated community buildings. The site is shown relative to surrounding physical features in Figure 1. The site layout and surrounding properties are shown in Figure 2. GeoEngineers also recently completed a subsurface engineering geologic and geotechnical engineering study for the subject property. The results of the geologic and geotechnical engineering study are reported separately.

Our study was completed at the request of the King County Housing Authority (KCHA). We understand that KCHA plans to redevelop the site. We further understand that the results of this Phase I ESA will be used by KCHA for redevelopment planning purposes.

1.1 PURPOSE AND SCOPE OF SERVICES

The purpose of this Phase I ESA is to identify recognized environmental conditions[1] (RECs) in connection with the property. GeoEngineers' scope of services was completed in general accordance with American Society for Testing and Materials (ASTM) Standard E1527-00 for Phase I ESAs, supplemented with a survey of selected structures for lead-based paint and asbestos-containing building materials completed at the request of KCHA. GeoEngineers' qualifications for performing Phase I ESAs are included in Appendix B. Our scope of services for the Phase I ESA is as follows:

1. Review readily available geotechnical reports, environmental reports and/or other relevant documents pertaining to environmental conditions at the subject site.
2. Review the results of a federal, state and local environmental database search provided by a subcontracted environmental data service for listings of known or suspected environmental problems at the site or nearby properties within the search distances specified by ASTM.
3. Review regulatory agency files regarding listed sites of potential environmental concern relative to the subject site.

[1] Recognized Environmental Conditions are defined in ASTM E-1527-00 as "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies."

4. Identify a key site manager with specific knowledge of past and present site use and request that he or she meet a GeoEngineers representative on site for an interview during the visual site reconnaissance. Interview the key site manager by phone if they are not available during the site reconnaissance. Interview others familiar with past and present uses of the site and its vicinity, as necessary.
5. Interview a representative of the local fire department, health department, and/or the Washington State Department of Ecology (Ecology) regarding the history of the subject site and surrounding properties relative to the likely presence of hazardous substances.
6. Review historical aerial photographs, fire insurance maps, city directories, building plans and tax assessor records, as available and appropriate, to identify past development history on and adjacent to the site relative to the possible use, generation, storage, release or disposal of hazardous substances. Attempt to identify uses of the site from the present to the time that records show no apparent development of the site, or to 1940, whichever is earlier.
7. Review current USGS topographic maps to identify the physiographic setting of the site.
8. Identify the source(s) of potable water for the site and the current heating and sewage disposal system(s) used at the site, if any. Inquire about the age of the heating and sewage system(s).
9. Provide a statement on the local geologic, soil and groundwater conditions based on our general experience and sources such as geologic maps and soil surveys.
10. Conduct a visual reconnaissance of the site and adjacent properties to identify visible evidence of RECs.
11. Subcontract asbestos-containing building materials and lead-based paint surveys of on-site structures selected by the owner.

1.2 SPECIAL CONSIDERATIONS

Our scope of services did not include an environmental compliance audit, an evaluation for the presence of toxic mold, polychlorinated biphenyls (PCBs) in light ballasts, radon, lead in drinking water or urea-formaldehyde foam insulation in on-site structures. Environmental soil, surface water or groundwater sampling and chemical analysis were not included as part of this Phase I ESA scope of services.

There were several limitations of our study as it relates to the visual site reconnaissance. Other than the building interior survey related to asbestos-containing building materials and lead-based paint evaluation by a subcontractor, we did not observe the interior of any residential buildings for the following reasons: relevant information regarding the residential structures was available in other site reports, and the buildings have been used for residential purposes; therefore, the risk of RECs deriving from this type of use is low. We observed the exterior of representative residential structures. We did not visually observe the exterior of all residential structures. We did not observe the interior of on-site buildings used for community service-related activities because activities conducted in these buildings consisted of office or meeting-related uses and therefore, the risk of RECs deriving from these types of uses is low.

Potential RECs associated with the structures mentioned in this report were evaluated based on observation of representative exterior spaces. Generalities were inferred for the residential housing

and public service buildings on the site, based on our observation of the exterior of representative structures.

We were unable to visually observe the interior of the abandoned former north annex structure located in the southwest portion of the site; this building was formerly part of the adjacent school to the south. The interior of this structure was not accessible during our visual reconnaissance because it was boarded up.

Floor drains in the maintenance center building that were observed are documented in this report; however, other floor drains were reported to us to exist but could not be observed during our site visit due to physical obstructions over the floor drains.

The asbestos-containing building materials and lead-based paint surveys were performed on a limited number of structures that were identified by KCHA. The building materials used in these structures should not be assumed to be representative of all on-site building materials.

2.0 SITE DESCRIPTION

2.1 INVOLVED PARTIES

The site currently is owned by KCHA. KCHA is planning to redevelop the site. The on-site maintenance center facility is operated by KCHA. Residential tenants occupy the residential buildings on the site. We did not identify the names of current or past residential tenants. Several community service organizations such as the neighborhood house, food bank, Headstart office and school, Hope VI office and family planning agencies currently occupy buildings on the site. The food bank was previously occupied by a clothing business. Names of other previous on-site uses and tenants were not made available to us.

2.2 LOCATION, LEGAL DESCRIPTION AND SETTING

General site information, property use(s) and environmental setting of the site area are summarized in Table I below. Refer to Figure 1 for a vicinity map and Figure 2 for the layout of the site in relation to surrounding properties.

Table I. Site Information

Topographic Map	U.S. Geological Survey, 7.5 minute Seattle South, Washington topographic quadrangle map dated 1949, photo-revised 1968 and 1973.
Quarter/Quarter, Section, Township and Range	North half of Section 6, Township 23 North, Range 4 East, Willamette Meridian.
Site Address	The general site address used for reference is 9900 – 8th Avenue SW, Seattle, King County, Washington. Numerous other addresses are associated with buildings on the site.
Site General Location	The site is generally bounded by Southwest Roxbury Street to the north; Southwest 100th and Southwest 102nd Streets to the south; and sections of 4th, 5th, 6th, 8th, 9th and 12th Avenues SW to the east and west. A valley borders the northeastern site boundary.
Site Legal Description and Tax Parcel Number	The legal description for the site is included in Appendix C. The tax parcel number for the entire site is 0623049260.
Site Approximate Area	90 Acres

Site Existing Use	Generally residential housing with community service buildings and one maintenance facility. The maintenance building is used for the following: vehicle maintenance, carpenter shop, paint shop, electric shop, vehicle and equipment storage, hazardous materials storage, and plumbing shop.
Geologic Setting	Upland glacial drift plains
Nearest Surface Water Bodies	Unnamed surface water body located approximately 750 feet to south, Lake Garrett located approximately 3,000 feet to south and Duwamish Waterway located approximately 1.25 miles to east-northeast. White Center Bog is located approximately 50 feet west of the site, tributary to Little Salmon Creek.
Approximate Surface Elevation	400 feet above mean sea level.
Soil and Geologic Conditions	Vashon till composed of nonsorted, non-stratified silty sand, gravel and clay; Vashon ice-contact deposits composed of stratified sand, silty gravel and clay, Vashon recessional deposits consisting of silt and sand with gravel. Some areas of fill, including imported material and regraded soil.
Depth to Groundwater	Varies; perched groundwater in central portion of site approximately 10 to 15 feet in depth.
Inferred Direction of Shallow Groundwater Flow	Varies. In the east 1/3 of the site groundwater flows to the east. In the central portion of the site groundwater flows toward the south. In the west 1/3 of the site, groundwater flows to the west.

Our knowledge of the general physiographic setting, geology and groundwater occurrence in the site vicinity is based on our review of the map listed above, our recent geotechnical-related explorations at the site and our general experience in the area.

2.3 SITE RECONNAISSANCE

2.3.1 Summary of Observations

A representative of GeoEngineers performed a visual reconnaissance of the site on November 25, 2002. The GeoEngineers representative was accompanied by Sam Fevaleaki, the KCHA maintenance center manager (identified as a "key site manager" with knowledge of the site), during the site reconnaissance.

The majority of the site was accessed via the 8th Avenue Southwest and other public rights-of-way. Site surface conditions generally consist of residential and community buildings, grass, trees, other landscaping and asphalt-concrete or portland cement concrete-paved parking areas. Note Section 1.2 of this report concerning the areas of the site that we did not observe. Our visual reconnaissance focused on the areas where hazardous substance use, storage and/or disposal was possible or likely, based on our experience.

Table II below summarizes conditions observed during our site reconnaissance. Section 2.3.2 contains additional details regarding conditions of potential environmental significance observed during our site reconnaissance and a summary list of known or suspect environmental conditions identified by this portion of our study. The approximate locations of the observed features discussed in this section are shown in Figures 2 and 3. Photographs of the site were taken to document observations made during our reconnaissance. Selected site photographs are presented in Figure 4.

Table II. Summary of Site Reconnaissance Observations

Feature	Observed	Not Observed	Comment, Location and/or Description
Structures (existing)	X		• Approximately 569 wood-frame residential dwelling units (as single or duplexes) and several community service buildings (wood-frame, concrete and metal construction). • A maintenance center constructed in about 1975. • The community buildings are: community building, Headstart (office and school), food bank, Hope VI office, neighborhood house and family planning. • The store along 8th Avenue Southwest west of the maintenance center is not part of the site.
Structures (evidence of former)		X	Our interviews and historical research indicated that prior to 1975, KCHA facility maintenance activities were originally located in a building that no longer exists. This previous maintenance facility building was generally located where the existing maintenance building is situated. We did not observe evidence of the previous structure.
Heating/Cooling System	X		Natural gas (previous use of coal stove and electric heat, see Section 4.2).
Floor Drains, Sumps or Drywells	X		• Floor drains were observed in the maintenance building (Figure 3) in the electric shop, plumbing shop, paint shop, mechanic shop and carpenter shop. These drains are connected to the municipal storm drain system (see Section 2.5.1). • A floor drain is located in the portion of the maintenance facility where the hazardous materials and paints are stored. This drain apparently is not connected to the storm drain system but discharges to the ground (e.g., a drywell). • Floor drains, connected to the sanitary sewer system, exist in the maintenance building bathrooms. • Former drywell located in the mechanic shop east of the hydraulic hoist. Based on our interview of maintenance facility personnel, waste oil was discharged directly into this drywell over the years.
Aboveground Storage Tanks (ASTs)	X		• One approximately 100-gallon polyethylene AST containing floor wax is located in the fenced area east of the maintenance center building. • One approximately 100-gallon AST storing new or used oil is located in the covered parking area in the southwest corner of the maintenance center.
Underground Storage Tanks (USTs) or Evidence of USTs	X		Mr. Fevaleaki stated that one 1,000-gallon unleaded gasoline UST, product piping and fuel dispenser were located near the northeastern portion of the maintenance facility (Figure 3). The UST was removed in 1998. See Section 3.2 for more information. Mr. Fevaleaki stated that a UST associated with the previous maintenance facility building was located near the center of the parking area within the maintenance center. This UST was removed several years ago. The size, contents and exact location of this previous UST are not documented.

Feature	Observed	Not Observed	Comment, Location and/or Description
Drums or Other Containers	X		• Approximately four 55-gallon drums storing new and used oil are located in the covered parking area of the maintenance center adjacent to the oil AST. Oil staining was observed on the exterior surface of the drums and on the concrete floor near the AST. The drums were situated on secondary containment during our site reconnaissance. • Several drums with secondary containment were observed in the hazardous materials storage room within the maintenance facility (Figure 3). Some of the drums contain paint stripper (solvent) and floor wax. Other containers of paint, gasoline and other substances not identified during the site visit also were stored in this area. We observed areas of localized staining of the concrete floor at this location. • Three empty 55-gallon drums were observed within the fenced area east of the maintenance center. The previous use and contents of these drums were not known by the key site manager we interviewed. We did not observe staining of the ground surface beneath or surrounding these drums at the time of our site visit. • Four to five 55-gallon oil drums with dispensers were observed in the northeastern portion of the maintenance building. These drums were on secondary containment. We did not observe significant staining of the concrete floor beneath or surrounding these drums.
Chemicals or Hazardous Materials (other than de minimis quantities of cleaning products)	X		• Containers of paint, paint stripper (solvent), gasoline and other chemical/hazardous substances were stored in the hazardous materials storage room in the maintenance center. • Approximately 70 bags of fertilizer stored on wooden skids were observed in the storage space between the covered parking area and the electrical room of the maintenance center. We did not observe visual evidence of leaks, spills or releases of fertilizer beneath or surrounding these bags at the time of our site visit. • Joint compound, paint texture, thinners, primers and other paint related chemicals are stored in one-gallon and 5-gallon containers in the paint room of the maintenance center. We did not observe visual evidence of leaks, spills or releases of these paint-related chemicals in the vicinity of the containers at the time of our site visit. • Maintenance-related cleaners such as cleansers, glass cleaner and bleach are stored in the tool room portion of the lunchroom in the maintenance center. We observed relatively good housekeeping in this area at the time of our visit.

Feature	Observed	Not Observed	Comment, Location and/or Description
Evidence of Leaks, Spills or Releases Surrounding ASTs, USTs, and/or Chemical Storage Areas	X		• Oil staining was observed on the concrete around the oil AST in the covered parking area of the maintenance center. • Localized staining from minor spills/drips of oil were observed on and near the 55-gallon drums near the AST in the covered parking area of the maintenance center. • Poor lighting in the hazardous materials storage room made it difficult to see evidence of significant leaks, spills or releases of hazardous substances in this area.
Stained or Corroded Floors, Walls or Drains (other than apparent water stains or minor oil stains on pavement from parked vehicles)	X		See above.
Pipes of Unknown Origin or Use		X	
On-site Septic System		X	
Sewage Disposal System	X		City of Seattle municipal sanitary sewer; see Section 2.5.1.
Potable Water Supply	X		Municipal supply; see Section 2.5.1.
Solid Waste Refuse Dumpsters		X	
Hydraulic Hoists	X		One hoist was observed in the mechanic shop of the maintenance center building. The hoist was an underground hydraulic unit. According to Mr. Fevaleaki, no known releases are associated with this hoist.
Oil/Water Separators		X	See Section 2.5.1.
Discolored or Stained Soil or Vegetation Potentially from Hazardous Substances		X	
Hazardous Waste Disposal Areas		X	
Uncontained Debris, Refuse or Unidentified Waste Materials	X		Hot water tanks, rubber tires, lawn-mower, plastic toys, miscellaneous household refuse in wooded areas, along edge of developed areas; concrete, asphalt, organic debris and discarded soil were observed on the valley walls in the east portion of the site.
Standing Water or Other Liquids		X	
Catch Basins and Storm Water Drainage	X		Catch basins were observed in the roadways and parking areas. According to Mr. Fevaleaki, the catch basins are connected to the City of Seattle municipal storm drain system. See Section 2.5.1.
Pits/Ponds/Lagoons		X	
Waste or Wastewater Discharges		X	
Unusual Odors		X	
Stressed Vegetation		X	
Fill Material		X	Mr. Fevaleaki indicated that fill material from Kent, Washington was brought to the site prior to construction of the gymnasium associated with the community center. Apparently there were no odors or staining associated with this fill soil, according to Mr. Fevaleaki. No other information concerning the specific origin, volume or soil quality of this fill was available. We could not visually observe the fill. Incidental fill was encountered in test pits and borings conducted by GeoEngineers and in test pits conducted by others south of SW 100th Street.
Water Wells (agricultural, domestic, monitoring)	X		Five observation wells installed as part of geotechnical study by GEI. See Figure 2 for locations.

Feature	Observed	Not Observed	Comment, Location and/or Description
Pad-Mounted Transformers	X		Two underground electrical transformers were observed in the southeast portion of the site. Others may exist on the site but were not observed. These transformers are owned and maintained by Seattle City Light.
Pole-Mounted Transformers		X	
Other Conditions of Environmental Concern	X		Possible asbestos-containing building materials and lead-based paint associated with on-site structures which were identified in previous studies and the subcontracted asbestos and lead-based paint survey.

Approximately 13 soil borings were completed on the site in late 2002 as part of our geologic and geotechnical engineering study reported separately. No evidence of hazardous substances was observed in soil encountered in the borings.

2.3.2 Findings

Known or suspect environmental conditions identified by this portion of the study are listed below:

- Confirmed asbestos-containing building materials and lead-based paint associated with on-site structures. See Section 4.6 for details.
- Activities conducted in the maintenance facility involve the use and storage of hazardous substances including paints, solvents, fuels and cleaners. Maintenance center personnel stated in our interview that waste oil was discharged into the drywell located in the mechanic shop from about 1975, when the building was constructed, to the mid-1990s. Mr. Fevaleaki stated that in the mid-1990s, KCHA was told by the EPA to discontinue this practice. No formal documentation concerning this practice or communication from EPA was provided to us. The quantity of waste oil and frequency of releases of waste oil to the drywell were not reported. With respect to other maintenance-related activities in the maintenance building, waste or spent materials are generated; however, no on-site other disposal of wastes was observed or reported in interviews.
- Several floor drains in the maintenance center are connected to the storm drain system. In addition, there are two floor drains that discharge to the ground (drywells).
- On-site storage of new and used waste oil in ASTs and 55-gallon drums. The ASTs and 55-gallon drums we observed generally appeared in good condition. However, we observed evidence (staining) of oil spills associated with the AST located in the covered parking area of the maintenance center and the drums located in the northeast corner of the building. The underlying concrete appeared to be in relatively good condition; however, cracks in the concrete were observed in the vicinity of the AST.
- One historic UST located at the maintenance center; one historic UST located at the former maintenance center (see Section 4.2). GeoEngineers reviewed a report associated with removal of one of the USTs in 1998. Additional information regarding the UST removed in 1998 is included in Sections 3.2 and 4.2.

- Chemical substances and fertilizer are stored at the site. Based on our November 2002 observations, the storage areas generally are in good condition with "good housekeeping."
- One underground hydraulic hoist is situated in the mechanic shop of the maintenance building.
- Several underground transformers were observed at the site. According to Mr. Fevaleaki, the transformers are owned by Seattle City Light.
- Two drywells observed in maintenance center: One of the drywells is located in mechanic shop and the other in the hazardous materials storage room.

2.4 ADJACENT PROPERTY AND VICINITY OBSERVATIONS

2.4.1 Summary of Observations

We viewed properties located adjacent to and surrounding the site on November 25, 2002 from accessible public rights-of-way and the site. We did not enter adjacent properties or buildings. The site generally is situated in an area that is developed with residential properties and some commercial and retail businesses. Section 2.4.2 contains additional details regarding conditions of potential environmental significance observed during our site reconnaissance and a list of known or suspect environmental conditions identified by this portion of our study. Table III below outlines adjacent land uses and pertinent observations with respect to conditions that could pose a REC on the subject site. Figure 2 shows adjacent property uses and locations in relation to the site.

Table III. Adjoining Streets and Adjacent Properties Observations

Direction	Adjoining Street	Position Relative to Site[2]	Adjacent Property and Use	Comments
North	Southwest Roxbury Street	Cross or upgradient depending on portion of site	Residential and church properties	Possible heating oil tanks (ASTs or USTs) associated with these buildings.
South and West	Southwest 102nd Street and Southwest 100th Street	Down- and cross-gradient depending on portion of site	Residential, White Center Heights Elementary School, and undeveloped	Possible heating oil tanks (ASTs or USTs) associated with these buildings.
East	4th, 5th and 6th Avenues Southwest	Downgradient and upgradient depending on portion of site	Kellan's Auto Body, Lucky 7 Foodmart and Single-family residential	Possible use and storage of petroleum products, solvents, paint, glues and other chemicals at auto body shop. Based on our visual observations, the layout of this structure suggests it may be a former service station (possible past or existing USTs). Possible past or existing USTs associated with former service station at Lucky 7. Possible heating oil tanks associated with residential properties.

2.4.2 Findings

Known or suspect environmental conditions identified by this portion of the study are listed below:

- Possible heating oil tanks (ASTs or USTs) associated with adjacent properties.

[2] The inferred shallow groundwater flow direction in the site vicinity fans out to the south from west to east described in Section 2.2.

- Possible petroleum-related chemicals, paints, glues and solvents related to auto body business and possible past or existing USTs associated with possible former service station use.
- Possible past or existing USTs associated with adjacent former service station (Lucky 7 Food Store).

2.5 PREVIOUS REPORTS

2.5.1 Summary of Previous Reports

GeoEngineers reviewed the previous reports listed below for the site. Also see Section 3.2 for our review of site reports identified during our search of regulatory agency databases and files.

- "White Center Heights Elementary School North Annex Building Letter of 'Good Faith' Inspection," dated July 25, 2002, prepared for White Center Heights Elementary School by PBS Environmental.
- "Lead in Paint Test Results," dated September 7, 1993, prepared for KCHA by American Environmental Services, Inc.
- "Engineering Assessment Services for Park Lake Homes Site I," dated March 8, 2001, prepared for KCHA by MLA Engineering, PLLC.
- "White Center Heights Elementary-North Annex PLM Inventory Samples," July 15, 2002 for KCHA by PBS Environmental

The above listed reports were provided to us by Oksara Winstead of KCHA (copies are included in Appendix D). No geotechnical or environmental reports are available for the site. The reader is referred to these reports for details concerning the presence of asbestos-containing building materials, PCB-containing fluorescent light ballasts, mold and lead-based paint in residential structures and mercury-containing lamps, possible PCB-containing lamps and biological contamination (mold) in the abandoned structure on the site that is located north of the adjacent elementary school.

Based on the 2001 report listed above, the municipal storm drain system on the site was constructed in 1943. The storm drains receive surface water runoff mainly from surrounding roads. However, the catch basins do not have oil/water separators, according to the 2001 report. The catch basins discharge to two surface water drainage basins known as the Duwamish and Salmon Creek Drainage Basins. The 2001 report states that the sanitary sewer system at the site was constructed in 1940 and replaced in the 1990s with new mains and side sewers.

Potable water on the site is provided by King County Water District #45 and Seattle Public Utilities. These utilities also were constructed in the 1940s and portions of piping have been replaced over the years.

2.5.2 Findings

Known or suspect environmental conditions identified by this portion of the study are listed below:

- Asbestos-containing building materials, lead-based paint, PCB-containing light ballasts, mercury-filled lamps and mold were identified in several of the residential and community structures on the site.

3.0 ENVIRONMENTAL RECORDS REVIEW

3.1 DATABASE SEARCH

GeoEngineers reviewed the results of a search of pertinent environmental regulatory lists and databases for current or previous facilities listed at addresses located within ASTM-specified distances from the subject site. The information reviewed was provided by a subcontracted regulatory list search service, Environmental Data Resources (EDR). The EDR report is presented in Appendix E. The report includes details regarding the listed facilities identified and maps showing the approximate locations of the listed facilities relative to the site.

GeoEngineers reviewed the search results for listings pertaining to the subject site. GeoEngineers also reviewed EDR's listing of database entries that could not be mapped by EDR because of insufficient addresses (orphans). Off-site facilities found within the specified distances from the site were evaluated for potential impact to the site.

The site is listed as a facility that generates hazardous waste. The site generator classification is "RCRA small quantity generator." The site also is listed on the registered UST list, the Leaking UST list and the Washington Independent Cleanup Report list related to the UST removed in 1998.

Table IV below summarizes the listed facilities that in our opinion could pose a REC to the subject site. Other listed facilities identified in Appendix E either are located a significant distance from the site or are located in an inferred down- or cross-gradient position relative to the site and are unlikely to pose a potential environmental concern to the site, in our opinion.

Table IV. Summary of Regulatory Database Search Listings of Potential Environmental Concern

Location	Listed Business	Listed Address	Regulatory Database	Description
Subject Site	Park Lake Homes	9900 – 8th Avenue SW (current address is 9700 – 8th Avenue SW	RCRA-small quantity generator, Registered UST, Leaking UST and Washington Independent Cleanup Report	• The RCRA listing is associated with the maintenance facility. Listing also references facility as an oil recycler. No violations were found associated with this activity. • A 1,000-gallon unleaded gasoline UST, installed in 1986 was removed in 1998. The listing references that soil contamination associated with the UST was "cleaned up." We reviewed Ecology's files for this listing as further discussed in Section 3.2.
Adjacent east and west depending on portion of site	7-11-2322-14460 (Lucky 7 Food Store)	9618 – 4th Avenue SW	Registered UST	Two 20,000-gallon USTs contained leaded and unleaded gasoline. The tanks were installed in 1964 and have since been removed. No Ecology files were available for this property at the time this report was conducted.

3.2 REVIEW OF REGULATORY FILES

We reviewed Ecology's files for the site. No Ecology files were available for the 7-11 facility identified in Section 3.1 or for the adjacent Kellan's Auto Body Sales and Service. Our file review was performed on November 27, 2002. A copy of the relevant file document is included in Appendix D. A summary of pertinent information follows.

- "Site Check/Site Assessment Report" dated January 7, 1999, prepared for Park Lake Homes by Washington State Underground Storage Tank Site Assessor at Foss Environmental Services.

According to the above documents, one 1,000-gallon unleaded gasoline steel UST was installed at the KCHA maintenance center site in 1984. The UST was located in the northcentral portion of the maintenance center (Figure 3). The intended use of the UST was for fueling KCHA maintenance vehicles. The 1998 report indicates that the UST was used to store gasoline for vehicles, lawn mowers and other maintenance equipment. The UST was removed in 1998 by Foss Environmental Services. All product piping and fuel dispenser connections were removed along with the UST.

Four excavation soil samples and two soil stockpile samples were obtained in 1998 during removal of the UST. Soil samples were submitted for chemical analysis of gasoline-range hydrocarbons, and benzene, ethylbenzene, toluene and xylenes by NWTPH-G/BETX methods. Analytes tested either were not detected or were detected at concentrations less than current Model Toxics Control Act (MTCA) cleanup levels except for benzene and gasoline detected in the soil sample obtained at a depth of 8 feet below ground surface (bgs) at the base of excavation. The concentration of benzene in the sample was 0.57 mg/kg; the MTCA Method A cleanup level for benzene that was in place at the time the tank was removed was 0.5 mg/kg. The current MTCA Method A cleanup level (effective August 2001) is 0.03 mg/kg. The concentration of gasoline in the sample was 61 mg/kg; the MTCA Method A cleanup level for gasoline that was in place at the time the tank was removed was 100 mg/kg. The current applicable MTCA Method A cleanup level (effective August 2001) is 30 mg/kg.

Impacted soil, approximately 10 cubic yards, was removed for off-site disposal and the excavation was backfilled with clean imported fill material. The release of gasoline to the soil reportedly resulted from overfilling practices. No groundwater was encountered in the UST excavation. Groundwater was observed at approximately 13 feet below the ground surface in an observation well installed east of the maintenance building by GeoEngineers during our geotechnical study.

3.3 FINDINGS

Known or suspect environmental conditions identified by this portion of the study relate to release(s) of gasoline to soil from a UST removed in 1998. Ecology files list the release as "cleaned up." The concentrations of benzene and gasoline in one soil sample from the base of the 1998 excavation at 8 feet bgs exceeded the current MTCA Method A cleanup levels. Groundwater quality associated with this release is not documented.

4.0 SITE HISTORY

4.1 HISTORICAL RESOURCES

Our understanding of the history of the site is based on a review of the information from the historical resources listed in Table V and interviews with the individuals listed.

Table V. Historical Resources Reviewed

Description	Provider or Interviewee	Dates of Coverage or Dates of Site Knowledge	Date Reviewed or Contacted	Comment (See Section 4.2 for findings)
Historical Aerial Photo-graphs[3]	Walker & Associates in Tukwila, Washington	1936, 1946, 1956, 1960, 1974, 1982, and 1992	11/20/02	See Section 4.2 for findings
Historical Fire Insurance Maps	EDR search of Sanborn maps	Not Available	11/14/02	Sanborn maps were not available for the site.
Historical Tax Assessors Records	Puget Sound Regional Archives	1938 to 1973	11/20/02	See Section 4.2 for findings
Historical City Directories	EDR search at public libraries	1961, 1966, 1971, 1976, 1981, 1988, and 1996	11/19/02	See Section 4.2 for findings
Permits	City of Seattle-Department of Construction and Land Use	Recent	12/13/02	Historical permits were not available for the site.
Interview	Sam Fevaleaki, Maintenance Center, Maintenance Foreman, King County Housing Authority (owner)	Employee for 30 years	11/25/02	See Section 4.2 for findings
Interview	Mimi Sheridan-Sheridan Consulting Group- Local Historian	Back to 1950s	12/19/02	No new or additional historical information related to the purpose of this Phase I ESA study was provided.
Interview	Agnus Ducay, Seattle Fire Marshall's Office	At least 10 years	12/02/02	The fire department did not have any records of hazardous storage permits or registered USTs associated with the site.

4.2 HISTORICAL SITE OWNERSHIP AND USE SUMMARY

The first available historical reference for the site is the 1936 aerial photograph. The site is not yet developed with the current housing as of 1936. Based on this photograph, the central portion of the site was developed as of at least 1936 with what appears to be a farm and orchard. As of 1936, smaller structures, likely residential, were located on site in the southeast and southwest corners of the intersection of 4th Avenue Southwest and Southwest Roxbury Street. Most of the main north-

[3] The scale of the photographs reviewed allowed for an interpretation of general site development/configuration, such as identifying most structures, roadways and clearings. However, the scale of the photographs did not allow for identification of specific site features, such as fuel pumps, wells or chemical storage areas on the site, if any.

south and east-west trending streets that exist today are apparent on the 1936 aerial photograph we reviewed. We were unable to confirm site use prior to 1936, nor were we able to confirm the year that the site was developed with the farm/orchard and residences; however, based on our knowledge of the general development history of the Seattle area, the farm/orchard and early residences were likely the first developed use of the site.

The available historical sources (tax assessment records and Mr. Fevaleaki) indicate that the site was purchased by the KCHA in 1943. The Boeing Company is believed to have owned the site prior to KCHA. According to Mr. Fevaleaki, the Boeing Company constructed most of the existing residential structures for residential use for Boeing employees. We did not research site ownership prior to Boeing's ownership.

According to the tax records, the building initially used as the community and maintenance building was constructed in 1943; this building was located south of the current community building. Tax assessor records indicate there was a carpenter shop, paint locker and furnace room in this building. There also was a UST associated with this building. The exact location, size, use of the UST and date removed are unknown. Mr. Fevaleaki stated that no UST site check site assessment or report were prepared. This building was apparently used by KCHA for maintenance from about 1943 until the existing maintenance center was built in 1975. Specific maintenance activities conducted are not well documented but likely included those activities being conducted currently such as: vehicle maintenance, carpentry, painting, electric and mechanical repair, plumbing repair, vehicle and equipment storage and hazardous materials storage including herbicides and fertilizers. These types of activities typically generate some wastes; specific waste disposal practices in use at this previous maintenance building from 1943 to 1975 are not known. Mr. Fevaleaki stated that he is unaware of past leaks, spills or releases associated with the previous maintenance building.

As previously noted, a large portion of the existing residential structures were constructed prior to 1943. There were supplemental phases of residential construction. This Phase I ESA report does not include a detailed listing of the dates of construction of all on-site residences. Other resources should be consulted for that information. The 1946 aerial photograph shows the site developed with most of the current residential housing and four non-residential structures located in the central portion of the site. Seven small structures are located around the current food bank building in the 1960 aerial photograph. By 1974, the small structures are no longer present. Additionally, by 1974 approximately eight apparent residential structures were removed from the southwest portion of the site, north of the elementary school. This location appears cleared of vegetation. Approximately 569 residential units currently exist at the site. Mr. Fevaleaki stated that these on-site structures were heated by coal stoves and electricity in the past; the current source of heat is natural gas. Heating oil was reportedly never used at the site since its construction. According to Mr. Fevaleaki, there has been no illegal drug labs or drug production activities that have occurred on the site over the years.

The current maintenance center structure was reportedly constructed in 1975, according to the aerial photographs and Mr. Fevaleaki. Mr. Fevaleaki reported that between about 1975 and the mid-1990s, there was on-site disposal of waste oil to a drywell located in the mechanic shop of the maintenance building. Mr. Fevaleaki stated that in the mid-1990s, KCHA was told by the EPA to discontinue this practice. No formal documentation concerning this practice or communication from

EPA was provided to us. The quantity of waste oil and frequency of releases of waste oil to the drywell were not reported. KCHA's current waste disposal practices involve collection of waste for off-site disposal or recycling. Mr. Fevaleaki stated that other than the waste oil historically discharged to the drywell, other wastes have been and are transported off-site for disposal or recycling. Mr. Fevaleaki stated that the past and current practice for application of fertilizers and herbicides for grass and other landscaping activities is by spreader in accordance with industry practices. No pesticides are known to have been used or currently utilized at the site.

The Headstart building was constructed on the site in 1978 and the current community center building in approximately 1980, according to Mr. Fevaleaki. The 1982 aerial photograph confirms these statements. The 1996 city directories listed community service organizations, Park Lake White Center for Boys and Highline Headstart.

Mr. Fevaleaki indicated that concrete and asphalt fill debris from street repair and maintenance was discarded over the edge of the valley in the northeast portion of the site near 2nd Avenue Southwest periodically from approximately 1975 to 1992. According to Mr. Fevaleaki, only asphalt, concrete, soil and grass clippings have been deposited at this location.

According to the fire department, no records of chemical storage or USTs were on file for the site. Seattle City Light apparently owns and maintains all the transformers on site.

The site is within the "downwind plume" of lead and arsenic contamination from historic Asarco smelter operations in Ruston, (Pierce County) Washington in the late 1800s through early 1998. The smelter site is more than 30 miles southwest of the subject site. The Seattle-King County Department of Public Health is conducting a soil sampling study throughout King and Pierce counties in areas identified where lead and arsenic in the smelter plume could affect soil. The vicinity of the site is targeted for soil sampling. The results of soil sampling for lead and arsenic originating from the Asarco smelter operations were not available as of the date of publishing this Phase I ESA report.

4.3 ADJACENT PROPERTIES

Adjacent properties generally were developed with scattered residences and farms by at least 1936, according to the aerial photograph. Undeveloped property still exists adjacent to the site in some areas. Adjacent property uses remain relatively unchanged on the 1956 and 1960 aerial photographs. Newer residential properties are apparent along the northern adjacent property in at least 1974. Two larger non-residential structures are located on the southeast corner of the intersection of 4th Avenue Southwest and Southwest Roxbury in the 1974 photograph. In the 1982 aerial photograph, an apparent service station structure is located on this adjacent property corner. The adjacent properties on the 1992 aerial photograph appear similar to the 1982 adjacent property layouts.

4.4 ENVIRONMENTAL LIENS OR PROPERTY USE RESTRICTIONS

During the course of our research, we were not notified of environmental liens related to the site. We were not provided with a copy of the title report for the site.

4.5 FINDINGS

Known or suspect environmental conditions identified by this portion of the study are listed below:

- Use and storage of hazardous substances and petroleum associated with the previous and existing maintenance buildings.
- Two USTs, now removed, at the maintenance center.
- On-site disposal of waste oil.
- Imported fill.
- Placement of waste concrete, asphalt and other fill to the hillside area on east side of site.
- Former service station adjacent to the site.

4.6 ASBESTOS-CONTAINING BUILDING MATERIALS AND LEAD-BASED PAINT

GeoEngineers subcontracted Pacific Rim Environmental, Inc. (PRE) to conduct an asbestos and lead-based paint survey for ten on-site structures that were selected by KCHA. The survey was performed on December 10 and 11, 2002. The ten structures in the survey included six residential houses (538, 602, 606, 616 and 620 SW 100th Place and 538 SW 99th Street), the maintenance building, the community building (with gymnasium), the food bank (former Clothes Closet) and headstart building and the headstart school structure (reinspection for asbestos). Refer to details of the survey in the copy of each of the reports included in Appendix D. Asbestos abatement cost estimates are also included in each of the survey reports of this appendix. A brief summary of the findings is described below:

Based on the results of the findings, asbestos and/or lead-based paint were detected in the structures tested with the exception of the community building where no asbestos or lead-based paint were detected. Asbestos was generally found in gasket material, mastics, some vinyl flooring, tar felt paper material, popcorn ceiling texture, cement board material, vinyl tile and silver roofing paint. Lead-based paint was generally found in the exterior door casing at the food bank building and window sills and door casings at the headstart office.

5.0 CONCLUSIONS

GeoEngineers has performed a Phase I ESA of the Park Lake Homes I property located at 9900 – 8th Avenue SW in Seattle, Washington. The Phase I ESA was conducted in general accordance with the scope and limitations of ASTM E 1527-00. Subcontracted surveys of selected structures for asbestos-containing building materials and lead-based paint also were performed. Based on the results of our study, it is our opinion that the following known or suspect environmental conditions identified by our study represent RECs for the site:

- ***On-Site Structures.*** Asbestos-containing building materials and lead-based paint associated with the on-site structures evaluated as described in Appendix D.
- ***Previous Maintenance Facility.*** On-site maintenance activities that occurred in the previous on-site maintenance building from about 1943 to 1975 may have used and stored hazardous substances including paints, solvents, fuels and cleaners and generated wastes. This building may have used oil as a source of heat. Specific waste disposal practices in use at this previous maintenance building from 1943 to 1975 are not known.

- ***Existing Maintenance Facility.*** Activities conducted in the existing maintenance facility involve the use and storage of hazardous substances including paints, solvents, fuels and cleaners. These activities generate waste or spent materials; however, no on-site disposal of wastes was observed or reported in interviews with one significant exception: between about 1975 and the mid-1990s, there was on-site disposal of waste oil to a drywell located in the mechanics shop of the maintenance building. The quantity of waste oil and frequency of releases of waste oil to the drywell were not reported. Numerous floor drains in the maintenance center are connected to the storm drain system and two floor drains discharge to ground (drywells).
- ***Existing Maintenance Facility.*** On-site storage of oil in ASTs and 55-gallon drums. The ASTs and 55-gallon drums we observed generally appeared in good condition. However, we observed evidence (staining) of oil spills associated with the AST located in the covered parking area of the maintenance center and the drums located in the southwest corner of the building. The underlying concrete appeared to be in relatively good condition; however, there are cracks in the concrete were observed in the vicinity of the AST.
- ***Existing Maintenance Facility.*** One historical UST was located at the maintenance facility. The UST stored unleaded gasoline and was removed in 1998 and had a documented release(s) of gasoline to soil. Ecology files list the release as "cleaned up." The concentrations of benzene and gasoline in one soil sample from the base of the 1998 excavation were less than cleanup levels that existed at the time the UST was removed; however, the concentrations exceeded the current MTCA Method A cleanup levels in place as of 2001. Groundwater quality associated with this release is not documented.
- ***Previous Maintenance Facility.*** A historic fuel UST was located at the previous maintenance center. Little information, other than the general location in the parking area of the existing maintenance building, is available concerning one of the removed UST.
- ***Existing Maintenance Facility.*** Chemical substances and fertilizer are stored at the site. Based on our November 2002 observations, the storage areas generally are in good condition with "good housekeeping."
- ***Existing Maintenance Facility.*** One underground hydraulic hoist is situated in the maintenance building.
- ***Gymnasium Area.*** Fill was imported to the site during construction of the gymnasium. The only information concerning the origin of this fill is that is came from Kent, Washington and that there was no reported staining or odors associated with the material.
- ***East Side of Site.*** Waste concrete, asphalt and other fill were placed on the hillside area on east side of the site.
- ***Asarco Smelter Operations:*** The site is within the "downwind plume" of lead and arsenic contamination from historic Asarco smelter operations in Ruston, (Pierce County) Washington in the late 1800s through early 1998. The smelter site is more than 30 miles southwest of the subject site. The Seattle-King County Department of Public Health is conducting a soil sampling study throughout King and Pierce counties in areas identified where lead and arsenic in the smelter plume could affect soil. The vicinity of the site is targeted for soil sampling.

- Automobile body and repair shop located adjacent to the northeast corner of the site and a former service station situated adjacent to the northeast corner of the site. Neither of these facilities are listed on state or federal databases of known or suspected contaminated sites, except for registered USTs at the former service station site.

Each of these conditions will need to be considered in site redevelopment planning.

The other known or suspect environmental conditions described in this report are not considered RECs because based on our study results, we did not identify an existing release, past release or material threat of a release of hazardous substances into the ground or structures at the site from these sources.

A summary of RECs for the site is as follows:

Description	Potentially Affected Media	Type of Potential Contamination	Location
Asbestos-containing building materials	Building materials	Asbestos	On-site structures
Lead-based paint	Building materials and soil surrounding buildings	Lead	On-site structures and surrounding soil
On-site disposal of waste oil	Soil and groundwater	Petroleum, solvents, PCBs, metals	Drywell in maintenance building
Use and storage of paints, solvents, fuels and cleaners	Soil and groundwater	Petroleum hydrocarbons and solvents	Previous and current maintenance center buildings
Possible discharge of hazardous substances to floor drains and drywells	Soil and groundwater	Petroleum hydrocarbons, paints, solvents	Maintenance center hazardous material storage room and mechanic shop floor drains.
Petroleum staining on Concrete floor from ASTs	Primarily soil	Petroleum hydrocarbons	Maintenance Center
Two former fuel USTs (removed)	Soil and groundwater	Petroleum-related contaminants	Former and existing Maintenance center buildings
Past and present fertilizer and herbicide use and storage	Primarily soil	Not specified	Mainly in maintenance facility. Fertilizers and herbicides use may have affected other areas.
Hydraulic hoist	Soil and groundwater	Petroleum hydrocarbons	Beneath concrete floor in mechanic shop
Imported fill material of unknown origin and quality	Primarily soil	Unknown	Beneath gymnasium floor of the community building
PCB light ballast and mercury-containing fluorescent lamps	None in current condition. Source of contamination to soil if disposed of onsite.	PCBs and mercury	North Annex Building
Asarco Smelter Fallout	Primarily surface soil	Lead and Arsenic	Not specific
Adjacent auto body and repair shop and former service station	Soil and groundwater	Petroleum-related contaminants, solvents, metals	Off-site

In our opinion, there is a moderate to high potential for soil, groundwater or surface water contamination resulting from the following conditions:

- ***Existing Maintenance Facility.*** Waste oil was allegedly discharged to one of the drywells in the maintenance from about 1975 to the mid-1990s. This is the only known on-site waste discharge reported to us. Based on the history of maintenance activities on the site, and our experience at other similar types of facilities of comparable age and use, it is possible there may have been other releases to the ground, floor drains or drywells from maintenance-related activities utilizing paints, solvents, fuels and cleaners and from oil storage, including one underground hydraulic hoist. A documented gasoline release occurred at the UST removed in 1998.

- ***Previous Maintenance Facility.*** Possible releases to the ground from maintenance-related activities utilizing paints, solvents, fuels and cleaners and from an historic UST.
- ***Gymnasium.*** Imported fill of unknown origin may contain have contained contaminants.
- Surface soil may at the site have been impacted by lead and arsenic in downwind fallout from the historic Asarco smelter operations in Ruston (Pierce County).

Further evaluation of the potential for impacted soil, groundwater or surface water would require additional research and/or explorations, sampling or testing of soil, groundwater or surface water. These potential environmental liabilities should be evaluated by King County Housing Authority relative to their objectives for the site.

In and of themselves the four items listed above, which represent a moderate to high potential for soil, groundwater or surface water contamination based on our experience, do not constitute evidence of a release that would be reportable under MTCA, in our opinion. Evidence of a release could possibly be encountered in the future in soil, groundwater or surface sampling that could be subject to MTCA reporting and other requirements.

Demolition of structures with lead-based paints may result in an increase in lead concentrations in soil in the vicinity of demolished structures. Therefore, PRE recommends baseline testing of soil lead concentrations, according to the U.S. Department of Housing and Urban Development (HUD) guidelines.

The asbestos and lead-based paint surveys completed for this study involved only selected structures; therefore, no assumptions can be made for asbestos and lead-based paint in building materials for those structures not sampled at the site.

6.0 LIMITATIONS

This Phase I ESA has been prepared for use by KCHA. GeoEngineers has performed this Phase I ESA of the Park Lake Homes I property at 9900 – 8th Avenue SW in general accordance with the scope and limitations of our contract dated October 31, 2002 and ASTM E 1527-00, Standard Practice for Phase I ESAs.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted environmental science practices for Phase I ESAs in this area at the time this report was prepared. Our services and the products of those services are not subject to any warranty, either express or implied.

Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

Please refer to the Appendix F titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.

We appreciate the opportunity to be of service to KCHA. Please call if you require more information or have questions regarding this report.

Respectfully submitted,

GeoEngineers, Inc.

Tina King, P.G.
Environmental Geologist

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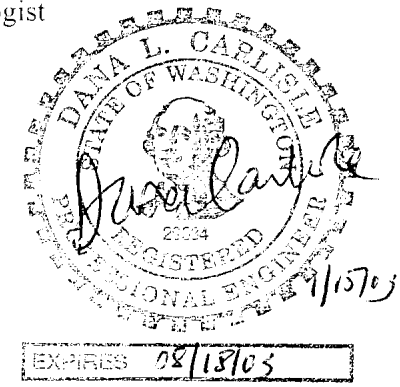

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